

Materials session

Measurements of Thermophysical Properties of Molten Materials from Oscillating and Rotating Drops

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Certain physical properties of a molten drop, levitated, for example, in a high temperature electrostatic levitator can be determined by inducing appropriate mechanical excitations on the drop. Mechanical excitation can be a resonant oscillation or a systematic rotation of a drop. Recent studies have shown that surface tension and viscosity of a low viscosity melt could be determined by inducing a resonant oscillation on the drop, however, these results might be erroneous if the effect of drop rotation that existed during the measurement was not taken into account. If a liquid is a highly viscous, the conventional drop oscillation method no longer applies, requiring a new non-contact method of determining the surface tension and the viscosity. This presentation will begin by showing various mechanical drop excitations that are possible on a levitated molten drop, and application of these excitation methods for the non-contact measurements of electrical resistivity, surface tension and viscosity of melts over a wide viscoisty range will be presented.

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